

What is claimed is:

1. A method of exchanging data with an implantable pulse generator device for providing cardiovascular therapy to a patient, comprising:
  - at the implantable pulse generator device, executing at least one application program that provides data that is to be exchanged and executing a set of information exchange instructions on the data obtained from the application program to:
    - divide the data into packets,
    - apply header data to each packet that provides transport control information that controls the reconstruction of the data from the data packets; and
    - wirelessly transmitting from the implantable pulse generator device each of the packets having the header data.
2. The method of claim 1, further comprising:
  - receiving each of the packets at a device external to the patient; and
  - analyzing the transport control information of the header data of each received packet to determine the position of data from the packet within the data being reconstructed.
3. The method of claim 1, wherein the transport control information corresponds to the TCP protocol.
4. The method of claim 1, wherein the transport control information corresponds to the UDP protocol.
5. The method of claim 1, wherein the transport control information corresponds to the TCP for transactions protocol.
6. The method of claim 1, wherein the set of information exchange instructions are further executed on the data obtained from the application program to:

apply header data to each packet that provides network routing information for each packet that specifies the intended receiving address for each packet.

7. The method of claim 6, further comprising:
  - receiving each of the packets at a device external to the patient; and
  - analyzing the network routing information of the header data of each received packet to determine where to route each of the packets for further transmission.
8. The method of claim 6, wherein the network routing information corresponds to the IPv4 protocol.
9. The method of claim 6, wherein the network routing information corresponds to the IPv6 protocol.
10. The method of claim 6, wherein the header data providing network routing information specifies a packet priority such that packets having a higher priority are wirelessly transmitted prior to packets with a lesser priority.
11. The method of claim 10, wherein the network routing information is IP and wherein the packet prioritization is specified in the precedence field.
12. The method of claim 6, further comprising:
  - at the implantable pulse generator device, executing the information exchange instructions to:
    - receive incoming data packets;
    - extract header data to obtain network routing information to detect that the data packet is addressed to the implantable pulse generator device; and
    - extract header data to obtain transport control information to determine how to reconstruct the data packets into data for the at least one application program.

13. The method of claim 1, wherein wirelessly transmitting each of the packets comprises transmitting each of the packets via an inductive coupling.
14. The method of claim 1, wherein wirelessly transmitting each of the packets comprises transmitting each of the packets via radio frequency.

15. An implantable pulse generator device for providing cardiovascular therapy to a patient, comprising:

at least one processing device configured to execute at least one application program to control the generation of electrical stimulation to provide the cardiovascular therapy and to utilize received data, the at least one processing device being further configured to execute a set of information exchange instructions to:

obtain incoming data packets, and

extract header data that provides transport control information from each of the incoming data packets to allow the data to be reconstructed from the packets for use by the at least one application program;

a pulse generator in communication with the at least one processing device to generate electrical stimulation to provide the cardiovascular therapy; and

a receiver in communication with the at least one processing device to wirelessly receive the incoming data packets having the transport control information and provide the incoming data packets to the at least one processing device.

16. The implantable pulse generator device of claim 15, wherein the transport control information corresponds to the TCP protocol.

17. The implantable pulse generator device of claim 15, wherein the transport control information corresponds to the UDP protocol.

18. The implantable pulse generator device of claim 15, wherein the transport control information corresponds to the TCP for transactions protocol.

19. The implantable pulse generator device of claim 15, wherein the at least one processing device is further configured to extract header data that provides network routing information from each of the incoming data packets to determine that the incoming data packets are addressed to the implantable pulse generator device.

20. The implantable pulse generator device of claim 19, wherein the network routing information corresponds to the IPv4 protocol.

21. The implantable pulse generator device of claim 19, wherein the network routing information corresponds to the IPv6 protocol.

22. The implantable pulse generator device of claim 19, wherein the at least one processing device is further configured to execute the at least one application program to produce data to be exchanged, and wherein the processing device is further configured to execute the set of information exchange instructions to:

divide the data from the at least one application program into outgoing packets,

provide header data for each packet that provides transport control information to allow the data to be reconstructed from the outgoing packets, and

provide header data for each packet that provides network routing information that specifies the intended receiving address for each data packet.

23. The implantable pulse generator of claim 15, wherein wirelessly receiving each of the packets comprises receiving each of the packets via an inductive coupling.

24. The method of claim 15, wherein wirelessly receiving each of the packets comprises receiving each of the packets via radio frequency.

25. An implantable pulse generator device, comprising:  
processing means for executing an application program and for executing  
information exchange means, wherein the information exchange means is for sending and  
receiving data packets and exchanging data of the data packets with the application  
program, wherein the information exchange means comprises:  
means for dividing outgoing data from the application program into  
outgoing packets and for reconstructing incoming data from incoming data  
packets, and  
means for adding transport control information to outgoing data packets  
and for extracting transport control information from incoming data packets; and  
means for providing electrical stimulation.
26. The implantable pulse generator device of claim 25, wherein the transport control  
information corresponds to the TCP protocol.
27. The implantable pulse generator device of claim 25, wherein the transport control  
information corresponds to the UDP protocol.
28. The implantable pulse generator device of claim 25, wherein the transport control  
information corresponds to the TCP for transactions protocol.
29. The implantable pulse generator device of claim 25, further comprising:  
means for adding network routing information to outgoing data packets and for  
extracting network routing information from incoming data packets.
30. The implantable pulse generator device of claim 29, wherein the network routing  
information corresponds to the IPv4 protocol.
31. The implantable pulse generator device of claim 29, wherein the network routing  
information corresponds to the IPv6 protocol.

32. The method of claim 25, further comprising means for wirelessly transmitting and receiving the packets.

33. A method of transferring data between a data network and an implantable pulse generator utilizing transport layer connections to transfer data in packets wherein the data network has a wired connection to a repeater in proximity to the implantable pulse generator and wherein the repeater has a wireless connection to the repeater, comprising:

establishing a first transport layer connection between the data network and the repeater over the wired connection;

establishing a second transport layer connection between the repeater and the implantable pulse generator over the wireless connection;

transferring a first data packet with first transport control header information from the data network to the repeater over the first transport layer connection; and

transferring the first data packet with second transport control header information from the repeater to the implantable pulse generator over the second transport layer connection.

34. The method of claim 33, further comprising:

transferring a second data packet from the implantable pulse generator to the repeater over the second transport layer connection; and

transferring the second data packet from the repeater to the data network over the second transport layer connection.

35. The method of claim 33, wherein the first and second transport layer connections are TCP connections, and wherein the second transport layer connection has a shorter re-transmission timeout than the first transport layer connection.

36. The method of claim 33, further comprising establishing a first network layer connection over the wired connection between the data network and the repeater to support the first transport layer connection and establishing a first network layer connection over the wireless connection between the repeater and the implantable pulse generator to support the second transport layer connection.



37. A system for transferring health care data, comprising:  
a data network;  
an implantable pulse generator; and  
a repeater located in proximity to the implantable pulse generator, wherein the repeater has a wired connection to the data network and a wireless connection to the implantable pulse generator, and wherein a first transport layer connection is established between the repeater and the data network and a second transport layer connection is established between the repeater and the implantable pulse generator such that data packets traverse both the first transport layer connection and the second transport layer connection when passing between the data network and the implantable pulse generator.
38. The system of claim 37, wherein the first transport layer connection has a longer re-transmission timeout than the second transport layer connection.
39. The system of claim 37, wherein the first transport layer connection and the second transport layer connection are TCP.